CIRCUIT CARD STRAPPNG, LOCATION
AND FIELD APPLICATION

INTRODUCTION:

This practical exercise will provide you with the time to practice choosing, strapping, installing and identifying circuit cards associated with designated channels. Your learning objective for this lesson is to correctly choose, strap, and install modem and line termination cards associated with the designated channel and identify locations of various circuit cards within 30 minutes. You must also correctly answer 14 out of 20 questions within one hour.

ITEMS YOU WILL NEED FOR THIS LESSON:

1.   AN/TYC-39(A).

2.   TM 11-5805-790-12-1.

3.   TM 11-5805-790-12-6.

4.   TYP1M, MOD22, MOD21, DILPM, DLTM6 and DLTM9 cards.

THE LESSON STRATEGY:
.
This practical exercise directs you in your practice of choosing, strapping, installing, and identifying locations of circuit cards and in answering written questions. The primary aids you will use are TM 11-5805-790-12-1 and TM 11-5805-790-12-6

APPLICATION:

1.   In Part One, you must be able to perform choosing, strapping, and installing circuit cards and identifying locations of various circuit cards within the AN/TYC-39A within 30 minutes using TM 11-5805-790-12-1 and TM 11-5805-790-12-6.

2.   Your instructor will initial your PE during your performance.

3.   In Part Two, answer questions by filling in the blanks or circling the answer. When you have completed Part Two, ask your instructor to grade it for you.

PART ONE:

Using the given information fill in the blanks with the proper information, strap or identify circuit card, and install in switch as instructed. For this exercise use the keep it simple principle (KISS). For example, if you are to use modem 6, you will use line termination unit (LTU) 6. Do not remove or install any circuit card unless told to by your instructor.

CAUTION

USE GROUND STRAP WHEN HANDLING CARDS.   CARDS WILL REMAIN IN THE NEST, IN AN ESD SHIPPING POUCH, OR IN YOUR HAND WHILE YOU ARE USING A GROUND STRAP. DO NOT PLACE CARDS ON ANY EQUIPMENT.   CHECK FOR BENT PINS BEFORE INSTALLING CIRCUIT CARD.   INSTALL IN PROPER NEST AND SLOT.

1.   You have a AN/UGC-74 teletype mode II circuit to install. The signal will enter the SEP on J11, pairs 1 and 2 (QUAD 1). Line/terminal classmarks are: character code ITA No.2 (Baudot), 150 baud, asynchronous-normal, COMSEC = KG 84A to loop key generator interface.

     a.   TRI-TAC Line Type_____

     b.   Modem type:_____

     c.   Modem location/address (rack, row, slot) to populate
            the card(s):

     d.   Strap:

            Interface option:_____

            Mode option:_____

            Baud rate:_____

     e.   Strap the modem for these options and insert in the
            correct modem slot(s).

     f.   LTU type:_____

     g.   LTU card location/address:_____

            INSTRUCTOR'S INITIALS:_____

2.   You have an AN/UGC-74 mode II teletype circuit. The signal will enter the SEP on J13, pairs 5 and 6 (QUAD 3). Line/terminal classmarks: character code ASCII, 1200 baud, transmit/receive data/clock - normal, equalizer in; master; COMSEC = KG-84A to loop key generator interface.

    a.   TRI-TAC Line Type_____

    b.   Modem type:_____

    c.   Modem location/address (rack, row, slot) to populate the card(s):

        _____

    d.   Strap:

        Interface option:_____

        Equalizer option:_____

        Mode option:_____

        Baud rate:_____

        Transmit data:_____

        Transmit clock:_____

        Receive clock:_____

        Receive data: _____

    e.   Strap the modem for these options and insert in the correct modem slot.

    f.   LTU type:_____

    g.   LTU card location/address:_____

        INSTRUCTOR'S INITIALS:_____

3.   You have a data adapter mode VI computer terminal circuit. The signal will enter the SEP on J14, pairs 1 and 2 (QUAD 1); 16 kb/s; master; COMSEC = KG-84A to loop key generator interface.

   a.   TRI-TAC line type:_____

   b.   Modem type:_____

   c.   Modem location/address (rack, row, slot) to populate
        the card(s):

_____

   d.   Strap:

        Modem option:_____

        Bit rate option:_____

   e.   Strap the modem for these options and insert in the
        correct modem slot.

   f.   LTU type:_____

   g.   LTU card location/address:_____

        INSTRUCTOR'S INITIALS:_____

4.   You have a circuit switch to message switch digital transmission group (DTG) interface utilizing TDIM A and MTG A. The circuit switch and message switch rates are 16 kbs. The message switch is receiving recovered clock from the circuit switch. Line termination unit 4 will be used. This is a data adapter interface.

     a.   TRI-TAC Line Type:_____

     b.   Modem type:_____

     c.   Modem location/address: rack, row, slot. (DO NOT REMOVE THIS CARD.)

             _____

     d.   MTG A (MTGS4) Strap. (DO NOT REMOVE THIS CARD)

             Loop rate:_____

             Local/Remote:_____

     e.   LTU type:_____

     f.   LTU card location/address:_____

             INSTRUCTOR'S INITIALS:_____

5.   Locate circuit card(s) for digital line concentrator B that contain a reset button? DO NOT PRESS RESET AND DO NOT REMOVE THESE CARD(S).

Card type(s) and address/location:

    _____
    _____
    _____
    _____

             INSTRUCTOR'S INITIALS:_____

PART TWO:

Answer questions by circling the answer or filling in the blank.

1.   The modem cards are installed in nest rack:

    a.   A23, rows A1 and A2.

    b.   A23, rows A2 through A5.

    c.   A25, rows A1 through A7.

    d.   A56, rows A1 and A2.

2.   What slot is used for modem 40 utilizing a Type I modem:

    a.   A23A440.

    b.   A23A513.

    c.   A23A514.

    d.   A23A515.

3.   Which of the following cards is the only card type to be installed in a left hand modem slot?

    a.   DILPM.

    b.   MOD21.

    c.   MOD22.

    d.   TYP1M.

4.   Which of the following is an operational strapping option for a Type I modem?

    a.   Baud rate.

    b.   Interface.

    c.   Mode.

    d.   All of the above.

5.   On a Type I modem, which of the following strapping options would you choose for 150 baud?

    a.   J11 to J12.

    b.   J12 to J13.

    c.   J14 to J15.

    d.   None of the above.

6.   On a MOD22 card, how would you strap the card for master?

    a.   J2 to J3.

    b.   J3 to J4.

    c.   J5 to J6.

    d.   J6 to J7.

7.   If you strapped a MOD22 card from J9 to J10, what would you be strapping for?

    a.   Normal transmit clock.

    b.   Normal transmit data.

    c.   Slave.

    d.   1200 baud.

8.   If you strapped a MOD21 card from J3 to J4, what would you be strapping for?

    a.   Equalizer in.

    b.   Equalizer out.

    c.   LKG.

    d.   150 baud.

9.   How many strapping options are there on a MOD22 card?

   a.   Two.

   b.   Four.

   c.   Six.

   d.   Eight.

10.   If you strapped a DILPM card from J3 to J4, J6 to J7, J9 to J10, what would you be strapping for?

   a.   Master.

   b.   Slave.

   c.   16 kb/s.

   d.   32 kb/s.

11.   What type circuit card supports a data adapter circuit?

   a.   DLTM6.

   b.   DLTM9.

   c.   TYP1M.

   d.   None of the above.

12.   What is the digital line termination module 6 card strap that will enable a dedicated terminal to pass data traffic?

   _____

13.   What is the quad for pairs 9 and 10 of the J-Box?

   _____

14.   What modem is interfaced when connecting a terminal to pairs 7 and 8 of J14?

   _____

15. What is the quad and cable number used to interface loop modem 42?

_____

16. What are the card locations/addresses of the local timing generators?

_____

_____

_____

17. What are the strapping positions for 16 kb/s loop rate on the LTGA card?

_____

18. What types of modulation techniques are used by a group modem?

_____

_____

_____

19. What are the names of the line termination units and their card types?

_____

_____

_____

20. What are the names of the loop modems and their card types?

_____

_____

SUMMARY:

     You have demonstrated your ability to identify, strap and install circuit cards as required for the type of field equipment that interfaces with the AN/TYC-39(A). With this knowledge and continued practice, your ability will continue to increase, making you a better operator or a better supervisor of the message switch AN/TYC-39(A).

END

DATA PATH

INTRODUCTION:

       During this practical exercise your learning objective is
to install patches to reroute signals and to perform testing
within 90 minutes. This practical exercise will provide you
with the time to determine signal paths and to practice
installing patch cords to reroute signals and to perform testing
of circuits. Your learning objective for this lesson is to
determine signal paths, install patch cords, and perform
loopback tests on selected circuits within 60 minutes. You must
also correctly answer 7 out of 10 questions within 60 minutes.

ITEMS YOU WILL NEED FOR THIS EXERCISE:

       a.   AN/TYC-39.

       b.   TM 11-5805-790-12-6.

       c.   Two single-lead patch cords.

       d.   Two double-lead patch cords.

       e.   One triple-lead patch cord.

       f.   Dedicated AN/UGC-74 Terminal Line.

       g.   Dedicated AN/UGC-144 Terminal Line.

THE LESSON STRATEGY:

       This practical exercise directs you in patching and testing
procedures. You must determine the correct signal path, perform
patching and perform loopback testing of selected circuits. The
primary aid you will use is TM 11-5805-790-12-6.

APPLICATION:

       1.   In Part One, you must be able to determine signal
paths and perform installation of patches as directed by this
practical exercise and your instructor. You will determine
information about where the signal will enter the signal entry
panel (SEP) and determine proper patching procedures to reroute
or test the line/equipment.

2.   Your instructor will initial your PE after you have successfully completed each of the patching installation exercises.

3.   In Part Two, answer questions by filling in the blanks. When you have completed Part Two, ask your instructor to grade it for you.

4.   If it is not clear what you are required to do, ask your instructor for clarification.

<u>PART ONE</u>:

Using the AN/TYC-39, AN/UGC-74, AN/UGC-144 and TM 11-5805-790-12-6, install the following patches for your lines. Your instructor will initial your PE when you have successfully completed each exercise.

Exercise 1.

It has been determined that the modem slot interfacing with this J11, pairs 3 and 4 (QUAD 2) is defective. You have been instructed to perform patching procedure to temporarily bypass this modem and use Modem 4 instead. Remember that a modem reroute requires two patches. Perform the correct patching procedures for this circuit to have connectivity.

INSTRUCTOR'S INITIALS: _____

Exercise 2.

At the AN/UGC-74 Terminal, determine the Quad and J Connector for this circuit. You will install a patch to allow the subscriber at the terminal to perform loopback testing on his equipment (external loopback testing by subscriber).

INSTRUCTOR'S INITIALS: _____

Exercise 3.

At the AN/UGC-144 Terminal, determine the Quad and J Connector for this circuit. You will install a patch to allow you to perform in house testing of the circuit (testing of your equipment inside the switch). The line number of this circuit is the same as the modem number. Use &nnn command to obtain the LTU number used for the circuit. Perform channel loopback tests - LTU, MODEM, and REMOTE.

MODEM #_____

LTU #_____

INSTRUCTOR'S INITIALS: _____

Exercise 4.

    You have another message switch directly connected via a 26 pair cable. Trunk assigned enters your SEP on J12, pairs 3 and 4 (Quad 2). Install patch to reverse polarity for transmit and receive for this trunk.

    What modem number interfaces with this trunk?
         _____

         INSTRUCTOR'S INITIALS: _____

Use Figures 1 through 4 and information sheet contained in this practical exercise to assist you in answering the following.

ANSWER LIST

A.   Figure 1: A51.
B.   Figure 1: A52.
C.   Figure 2: A9.
D.   Figure 2: Patch 1.
E.   Figure 2: Patch 2.
F.   Figure 2: Patch 3.
G.   Figure 2 & 4: Patch 4.
H.   Figure 3: Patch 5.
I.   Figure 3: A26, A27, A28, A29, A30.
J.   Figure 4: A11, A12, A13, A14, A15.

Fill in the blank with a letter from the answer list above. Each answer will only be used once.

___ 1.   Bad LTU. Rerouted signal around bad LTU #20 to unused LTU #24.

___ 2.   Used to patch telephone.

___ 3.   Red TED Patch Panel.

___ 4.   Allows subscriber to perform loopback testing on his terminal.

___ 5.   Allows switch personnel to perform loopback testing of internal switch signal flow.

___ 6.   Bad modem slot. Rerouted signal to modem 47.

___ 7.   The 26-pair cable connected to J12 has a bad cable wire on Quad 5. Subscriber moved to spare 2 on J12. Will still use original modem.

___ 8.   Interfaces SEP at J13 & J14.

___ 9.   Red LKG Patch Panel.

___ 10. Black LKG Patch Panel.

A51

A52

FIGURE 1.

PATCH 1

PATCH 2

PATCH 3

P/O
PATCH 4

NOT USED
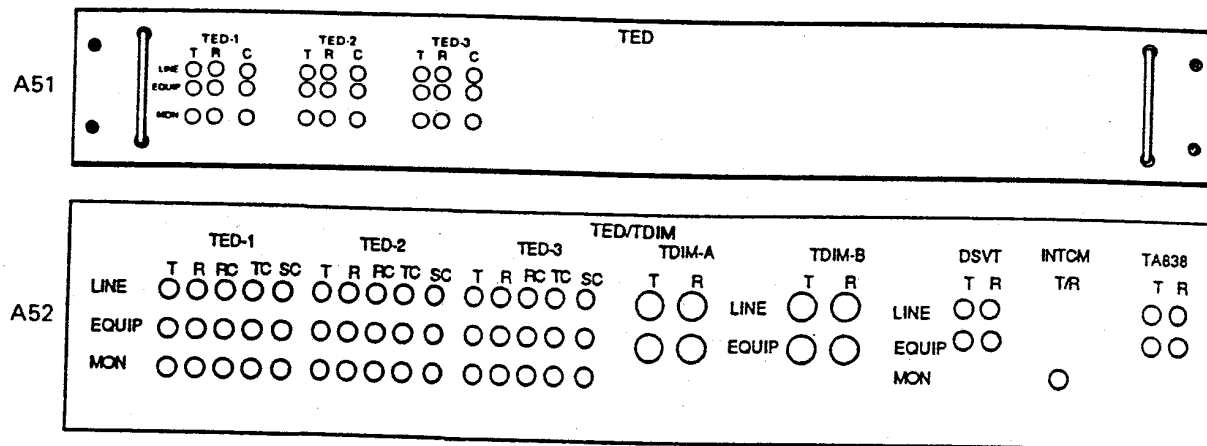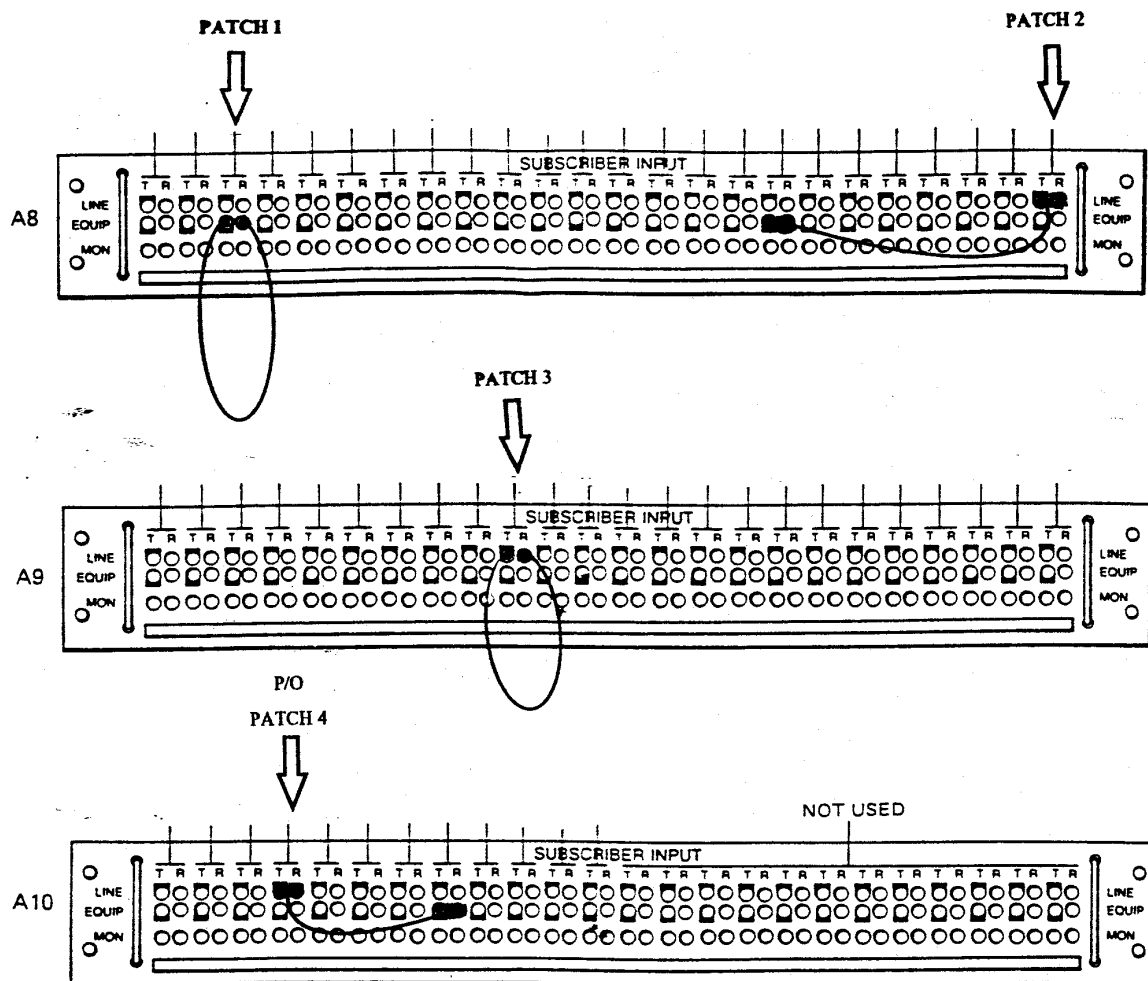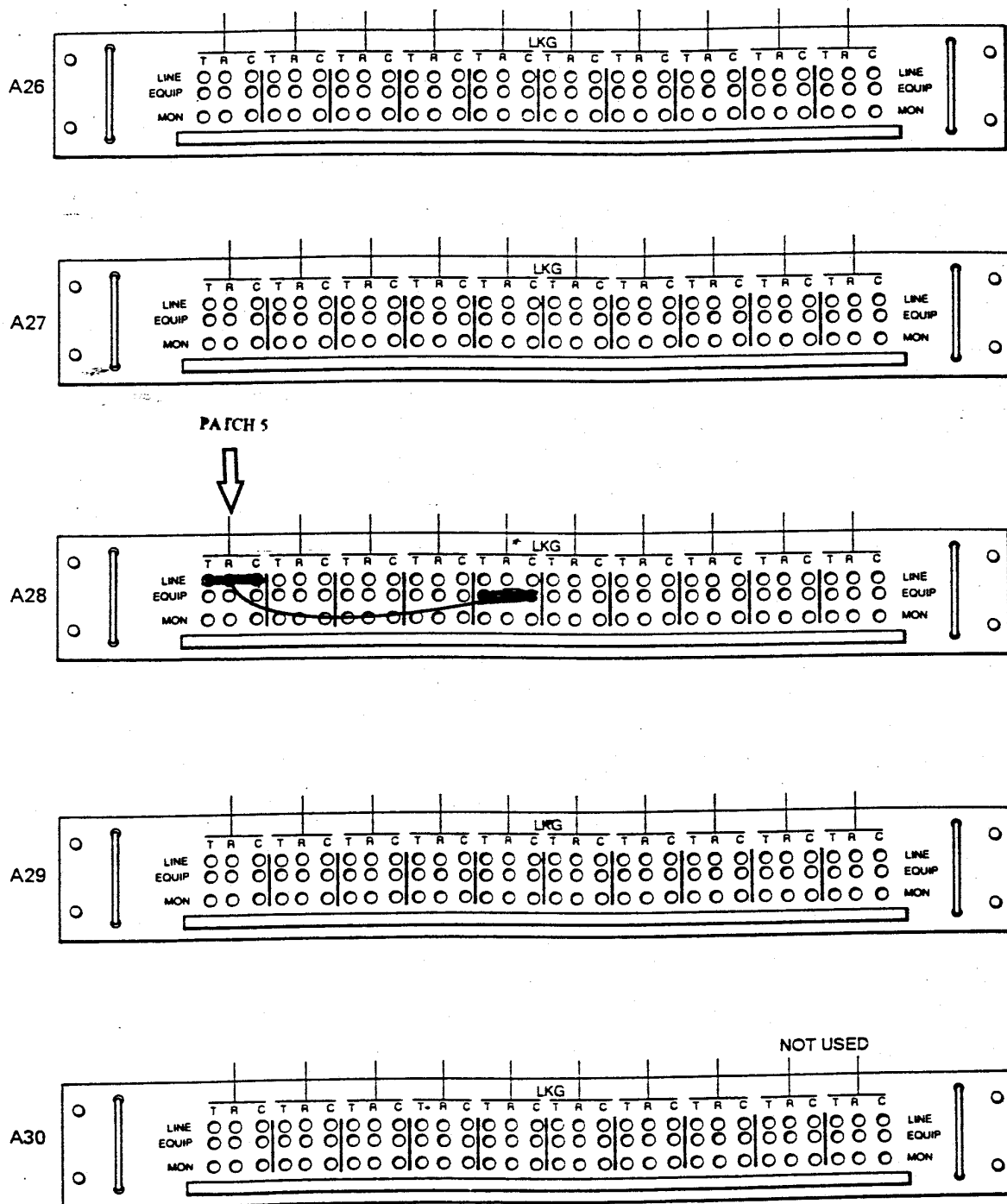
FIGURE 2.

FIGURE 3.

FIGURE 4.

INFORMATION SHEET
TYPES OF PATCHING

LOOPBACK:

     Allows the testing of internal switch equipment or external lines. At the subscriber input patch panel (P/P), connect a single lead patch cord from the transmit to the receive jack of either the line or equipment side of the channel (quad/pairs) being tested.

     By installing a patch in the equipment jacks, switch personnel can perform loopback testing of internal message switch equipment. Subscribers can perform loopback testing of their own equipment (external) by your installation of patch in the line jacks of the channel.

     Take channel out of service, install patch, and perform loopback testing of channel. Before placing channel back in service, remove patch.

SUBSCRIBER PATCH:
     Used when a signal going through a 26-pair cable is not received as a result of a defective cable pair. At the subscriber input P/P connect a two-lead patch cord from the equipment side of the original channel (quad/modem) to the line side of the newly selected cable pair.

     No changes to switch data base is required. Subscriber would move terminal at J-Box to an unused or spare QUAD.

MODEM PATCH:
     Used to patch around a defective loop modem by patching the original signal path to a spare/unused modem and then patching to return to original signal flow. At the subscriber P/P connect a two-lead patch cord from the line side of the defective channel/modem to the equipment side of the spare of your choice. At the black LKG p/p connect a three-lead patch cord from the line side of the new modem to the equipment side of the original cable & quad of faulted modem. The first patch isolates from the line a faulted modem or modem slot and reroutes to another modem and the second patch returns signal back to the normal flow of the line.

     The newly selected modem should be checked for card type and strapping. Perform an LMOD command to change the data base with the correct modem for this circuit.

<u>LTU PATCH</u>:

Used to patch around a defective LTU or LTU slot. On RED LKG P/P connect a three-lead patch cord from the line side of the failed channel to the equipment side of the channel selected as a spare/unused LTU.

The newly selected LTU should be checked for card type and strapping. Perform an LMOD command to change the data base with the correct LTU for this circuit.

<u>LKG PATCH</u>:

Used to patch around a defective LKG or LKG slot. On the Black LKG P/P, connect a three-lead patch cord from the line side of the defective channel to the equipment side of the spare/unused LKG you have selected. On the LKG Red P/P, connect a three-lead patch cord from the equipment side of the faulted channel/LKG to the line side of the spare you have selected.

The newly selected LKG should be checked for switch settings and proper variables. Perform an LMOD command to change the data base with the correct LKG for this circuit.

<u>TED BYPASS</u>:

Used to temporarily patch around a TED. At black TED/TDIGM patch panel, place one end of patch cord into line side of the TED to be bypassed. At the red TED patch panel place the other end of the patch cord into the equipment side of the TED to be bypassed.

<u>MS TO MS PATCH</u>:

Used to reverse polarity (Transmit/Receive) when two TYC-39 switches are trunked directly via a 26-pair cable. Connect a two-lead patch cord at the subscriber input P/P line side of the trunk (channel/quad). Reverse the polarity of the patch cord and connect the other end into the equipment side of the trunk.

This procedure should only be performed in one of the two directly connected switches. Repeat for all the TYC-39 to TYC-39 26-pair trunks. This patch should not be used for any other transmission media such as radio, satellite, etc.

OFF-LINE TABLE GENERATION

INTRODUCTION:

    This practical exercise provides you with time to practice AN/TYC-39A data base and networking procedures. Your objective is to correctly perform all of the procedures in accordance with the TMs, while observing safety precautions.

ITEMS YOU WILL NEED FOR THIS LESSON:

    Check your workstation to ensure that you have the following items. If any items are missing, notify your instructor.

    a.   TM-11-5805-799-12 series.

    b.   AN/TYC-39A.

    c.   Double Sided/high density disks.

    d.   Existing switch program load disk (PLD).

THE LESSON STRATEGY:

1.   To emulate a real scenario, you were provided with the raw data to build your data base. Your task will be to write a security and line classmark data base and create a security and line classmark PLD. You will have 3 hours in which to write security and line classmark data bases, and 4 hours in which to validate the data bases and create security and line class PLDs.

2.   Use your TMs throughout this exercise. Your main references for the practical exercise will be TM 11-5805-790-12-2 and 11-5805-790-12-5.

5.   Ask your instructor for assistance if you have any questions and/or problems during this exercise.

6.   Upon completion, have your instructor verify and explain any areas of difficulty.

<u>APPLICATION:</u>

1.   Write a security data base and save commands into a personal computer (PC) file.

                              INSTRUCTOR INITIALS _____

2.   Using your PC floppy that contains the PC file, create security DBD via the VTOF utility.

                              INSTRUCTOR INITIALS _____

3.   List the contents of the DBD file using the VTOF utility.

                              INSTRUCTOR INITIALS _____

3.   Using your security DBD and the existing switch PLD, create your security PLD via the TGEN job.

                              INSTRUCTOR INITIALS _____

4.   MSLD your security PLD and logon as your security ID type. Print a list of passwords.

5.   Write the line classmark data base to support a network. Use the network diagrams and supporting raw data provided in this exercise. Your instructor will tell you which network and site for which you are to develop a data base.

NETWORK: Dedicated or Switched/Dedicated
SITE: 01 OR 02   INSTRUCTOR INITIALS _____

6.   MSLD your security PLD into system. Log on as the proper user type to perform line classmarks. Use your passwords and user types. With a PC floppy with line classmarks create line classmark DBD via the VTOF utility.

                              INSTRUCTOR INITIALS _____

7.   List the contents of the DBD file using the VTOF utility.

                              INSTRUCTOR INITIALS _____

8.   Using the line classmark DBD and your security PLD (MSLD), create your line classmark PLD via the TGEN job.

                              INSTRUCTOR INITIALS _____

9.   MSLD your line classmark PLD and logon as your admin/supervisor ID type.   INSTRUCTOR INITIALS _____

DEDICATED TRAINING NETWORK DATA

```
------------------------------------------------------------------
```
 SITE 01 BASIC INFORMATION

```
     ALL INTERFACES = UNITED STATES - AN/TYC-39A 16Kbs
     ALL BACKLOG CODES = 0
     ALL SECURITY = TS FOR ALL LINES/ROUTERS TO INCLUDE TRAFFIC
                    SERVICE U/R (RUSFCS/UUSFCS)
     ADD ALL SPECAT/SHD AUTHORIZATIONS FOR TRAFFIC SERVICE LINES
```
```
------------------------------------------------------------------
```
 SITE 01 COLLECTIVE INFORMATION

```
     ALL = RUSFAST RUSFUNK RUSFLIP RUSFLOP
```
```
------------------------------------------------------------------
```
 SITE 01 LL10 INFORMATION

```
     LL10 LTU ____ MD ____ LKG ____
     LOOP SPEED 9.6K              DATA MODE CONTROL = YES
     RELAY TYPE = 5               MODE = 6
     FRAMING = NO                 ERROR CONTROL =MULTI-SAMPLING
     INFORMATION RATE = 2.4K      MASTER
     FIRST LINK = LL10
```
```
------------------------------------------------------------------
```
 SITE 01 LL11 INFORMATION

```
     LL11 LTU ____ MD ____ LKG ____   LOOP SPEED 2.4K
     TRANSMISSION MODE = CONTINUOUS
     FIRST LINK = LOGICAL LINE 10
```
```
------------------------------------------------------------------
```
 SITE 01 LL20 INFORMATION

```
     LL20 LTU ____ MD ____ LKG ____   LOOP SPEED = 1.2K
     RI = RUSFUNK                 LMF = 8-LEVEL TTY ONLY JANAP
     TRANSMISSION MODE = NORMAL   TELETYPE LINE SIZE = 80
     CD = UNK                     FULL START OF MESSAGE
     STOP BITS = 2                SERVICE MESSAGE RI = RUSFUNK
```
```
------------------------------------------------------------------
```
 SITE 01 LL21 INFORMATION

```
     LL21 LTU ____ MD ____ LKG ____   LOOP SPEED = 2.4K
     RI = RUSFLIP                 LMF = 8-LEVEL TTY ONLY JANAP
     TELETYPE LINE SIZE = 80      SMRI = RUSFLIP
     TRANSMISSION MODE = CONTINUOUS
```
```
------------------------------------------------------------------
```

  SITE 01 LL22 INFORMATION

      LL22 LTU ____ MD ____ LKG ____   LOOP SPEED = 2.4K
      DTE NUMBER = 1   DMC = YES
      MASTER   RI = RUSFLOP
      TELETYPE LINE SIZE = 80   LMF = 8-LEVEL TTY ONLY JANAP
      ERROR CONTROL = MULTI-SAMPLING
      TRANSMISSION MODE = CONTINUOUS
      INFORMATION RATE = 2.4K   ECP AUTHORIZED
      SERVICE MESSAGE RI = RUSFLOP NO FRAMING
      INFORMATION RATE = 2.4K

  SITE 01 LL23 INFORMATION

      LL23 LTU ____ MD ____ LKG ____   LOOP SPEED = 9.6K
      DTE NUMBER = 1   DMC = YES
      MASTER   RI = RUSFAST
      LMF = 8-LEVEL TTY ONLY   TELETYPE LINE SIZE = 80
      ERROR CONTROL = MULTI-SAMPLING
      NO FRAMING   INFORMATION RATE = 9600
      MODE 6 STORAGE = 96   ECP AUTHORIZED
      SERVICE MESSAGE RI = RUSFAST
      DATA ADAPTER TYPE = (DISPLAY OR STORAGE), (PAPER TAPE), AND
                          (PAGE PRINTER)
      TERMINAL TO RECEIVE STATISTICS, ROUTING REPORTS AND DADI
      DISPLAYS FROM SITE 01

  SITE 01 LL30 INFORMATION

      LL30 LTU ____ MD ____ LKG ____   MODE 1
      CONNECTION TYPE = DEDICATED CONVENTIONAL
      LOOP SPEED = 2.4K
      TRANSMISSION MODE = CONTINUOUS
      LMF = 8-LEVEL TTY ONLY JANAP
      SMRI = YERASVA
      Y RELAY ROUTER = CRITIC DETERMINISTIC ROUTER

```
------------------------------------------------------------
  SITE 02 BASIC INFORMATION

      ALL INTERFACES = UNITED STATES        16Kbs AN/TYC-39A
      ALL BACKLOG CODES = 0
      ALL SECURITY = TS FOR ALL LINES/ROUTERS TO INCLUDE TRAFFIC
                     SERVICE U/R (RUTCCS/UUTCCS)
      ADD ALL SPECAT/SHD AUTHORIZATIONS FOR TRAFFIC SERVICE LINES
------------------------------------------------------------
  SITE 02 COLLECTIVE INFORMATION

      ALL = RUTCOLD RUTCAKE RUTCAGE RUTCARP
------------------------------------------------------------
  SITE 02 LL10 INFORMATION

      LL10 LTU ____ MD ____ LKG ____    LOOP SPEED = 9.6K
      DATA MODE CONTROL = YES          SLAVE
      RELAY TYPE = 5                   MODE = 6
      FRAMING = NO                     ERROR CONTROL =MULTI-SAMPLING
      INFORMATION RATE = 2.4K          FIRST LINK = LL10
------------------------------------------------------------
  SITE 02 LL11 INFORMATION

      LL11 LTU ____ MD ____ LKG ____    LOOP SPEED = 2.4K
      TRANSMISSION MODE = CONTINUOUS
      FIRST LINK = LOGICAL LINE 10
------------------------------------------------------------
  SITE 02 LL20 INFORMATION

      LL20 LTU ____ MD ____ LKG ____    LOOP SPEED = 1.2K
      RI = RUTCOLD                     LMF = 8-LEVEL TTY ONLY JANAP
      TRANSMISSION MODE = NORMAL       TELETYPE LINE SIZE = 80
      CD = OLD                         FULL START OF MESSAGE
      STOP BITS = 2                    SERVICE MESSAGE RI = RUTCOLD
------------------------------------------------------------
  SITE 02 LL21 INFORMATION

      LL21 LTU ____ MD ____ LKG ____    LOOP SPEED = 2.4K
      RI = RUTCAKE                     LMF = 8-LEVEL TTY ONLY JANAP
      TRANSMISSION MODE = CONTINUOUS
      TELETYPE LINE SIZE = 80          SMRI = RUTCAKE
------------------------------------------------------------
```

 SITE 02 LL22 INFORMATION

    LL22 LTU ____ MD ____ LKG ____   LOOP SPEED = 2.4K
    DTE NUMBER = 1   DMC = YES
    MASTER   RI = RUTCAGE
    TELETYPE LINE SIZE = 80   LMF = 8-LEVEL TTY ONLY JANAP
    ERROR CONTROL = MULTI-SAMPLING
    TRANSMISSION MODE = CONTINUOUS
    INFORMATION RATE = 2.4K   ECP AUTHORIZED
    SERVICE MESSAGE RI = RUTCAGE NO FRAMING

 SITE 02 LL23 INFORMATION

    LL23 LTU ____ MD ____ LKG ____   LOOP SPEED = 9.6K
    DTE NUMBER = 1   DMC = YES
    MASTER   RI = RUTCARP
    LMF = 8-LEVEL TTY ONLY   TELETYPE LINE SIZE = 80
    ERROR CONTROL = MULTI-SAMPLING
    NO FRAMING   INFORMATION RATE = 9600
    MODE 6 STORAGE = 96   ECP AUTHORIZED
    SERVICE MESSAGE RI = RUTCARP
    DATA ADAPTER TYPE = (DISPLAY OR STORAGE), (PAPER TAPE), AND
    (PAGE PRINTER)
    TERMINAL TO RECEIVE STATISTICS, ROUTING REPORTS AND DADI
    DISPLAYS FROM SITE 02

 SITE 02 LL30 INFORMATION

    LL30 LTU ____ MD ____ LKG ____
    MODE 1
    CONNECTION TYPE = DEDICATED CONVENTIONAL
    LOOP SPEED = 2.4K
    TRANSMISSION MODE = CONTINUOUS
    LMF = 8-LEVEL TTY ONLY (JANAP)
    SMRI = YERASVA
    Y RELAY ROUTER = CRITIC DETERMINISTIC ROUTER

SWITCHED AND DEDICATED TRAINING NETWORK DATA

SITE 01 BASIC INFORMATION

    PHONE # 914 201-9734000   16Kbs AN/TYC-39A
    ALL INTERFACES = UNITED STATES
    ALL BACKLOG CODES = 0
    ALL SECURITY = TS FOR ALL LINES/ROUTERS TO INCLUDE TRAFFIC
                   SERVICE U/R (RUSFCS/UUSFCS)
    ADD ALL SPECAT/SHD AUTHORIZATIONS FOR TRAFFIC SERVICE LINES

SITE 01 MS-CS INFORMATION

    NUMBER OF CHANNELS 18   DIPHASE
    NO TED REQUIRED   RED CLOCK
    LL01 IS TRUNK NUMBER 1 LTU ____ LKG ____
    LL02 IS TRUNK NUMBER 2 LTU ____ LKG ____
    LL03 IS TRUNK NUMBER 3 LTU ____ LKG ____
    LL04 IS TRUNK NUMBER 4 LTU ____ LKG ____
    LL05 IS TRUNK NUMBER 5 LTU ____ LKG ____
    ALL DIGITAL TRUNKS. USE LTU 00 THROUGH 04 AND LKG 00
    THROUGH LKG 04 FOR MS/CS TRUNKS

SITE 01 COLLECTIVE INFORMATION

    ALL = RUSFAST RUSFUNK RUSFOLA RUSFLIP RUSFLOP RUSFOTA

SITE 01 LL10 INFORMATION

    LL10 LTU ____ MD ____ LKG ____
    LOOP SPEED 9.6K   DATA MODE CONTROL = YES
    RELAY TYPE = 5   MODE = 6
    FRAMING = NO   ERROR CONTROL =MULTI-SAMPLING
    INFORMATION RATE = 2.4K   MASTER
    FIRST LINK = LL10

SITE 01 LL11 INFORMATION

    LL11 LTU ____ MD ____ LKG ____   LOOP SPEED 2.4K
    TRANSMISSION MODE = CONTINUOUS
    FIRST LINK = LOGICAL LINE 10

```
-----------------------------------------------------------------------
  SITE 01 LL20 INFORMATION

     LL20 LTU ____ MD ____ LKG ____    LOOP SPEED = 1.2K
     RI = RUSFUNK                      LMF = 8-LEVEL TTY ONLY JANAP
     TRANSMISSION MODE = NORMAL        TELETYPE LINE SIZE = 80
     CD = UNK                         FULL START OF MESSAGE
     STOP BITS = 2                     SERVICE MESSAGE RI = RUSFUNK
-----------------------------------------------------------------------
  SITE 01 LL21 INFORMATION

     LL21 LTU ____ MD ____ LKG ____    LOOP SPEED = 2.4K
     RI = RUSFLIP                      LMF = 8-LEVEL TTY ONLY JANAP
     TRANSMISSION MODE = CONTINUOUS
     TELETYPE LINE SIZE = 80          SMRI = RUSFLIP
-----------------------------------------------------------------------
  SITE 01 LL22 INFORMATION

     LL22 LTU ____ MD ____ LKG ____    LOOP SPEED = 2.4K
     DTE NUMBER = 1                    DMC = YES
     MASTER                           RI = RUSFLOP
     TELETYPE LINE SIZE = 80          LMF = 8-LEVEL TTY ONLY JANAP
     ERROR CONTROL = MULTI-SAMPLING
     TRANSMISSION MODE = CONTINUOUS
     INFORMATION RATE = 2.4K          ECP AUTHORIZED
     SERVICE MESSAGE RI = RUSFLOP  NO FRAMING
-----------------------------------------------------------------------
  SITE 01 LL23 INFORMATION

     LL23 LTU ____ MD ____ LKG ____    LOOP SPEED = 9.6K
     DTE NUMBER = 1                    DMC = YES
     MASTER                           RI = RUSFAST
     LMF = 8-LEVEL TTY ONLY           TELETYPE LINE SIZE = 80
     ERROR CONTROL = MULTI-SAMPLING
     NO FRAMING                       INFORMATION RATE = 9600
     MODE 6 STORAGE = 96              ECP AUTHORIZED
     SERVICE MESSAGE RI = RUSFAST
     DATA ADAPTER TYPE = (DISPLAY OR STORAGE), (PAPER TAPE), AND
                        (PAGE PRINTER)
     TERMINAL TO RECEIVE STATISTICS, ROUTING REPORTS AND DADI
     DISPLAYS FROM SITE 01
-----------------------------------------------------------------------
```

```
------------------------------------------------------------
  SITE 01 CS MODE VI SUBSCRIBER INFORMATION

    INFORMATION RATE = 2400        PHONE # = 814 7450106
    DTE NUMBER = 1                 DMC = YES
    RI = RUSFOOL                   NO FRAMING
    LMF = 8-LEVEL TTY ONLY         TELETYPE LINE SIZE = 80
    ERROR CONTROL = MULTI-SAMPLING
    MODE 6 STORAGE = 96            ECP AUTHORIZED
    SERVICE MESSAGE RI = RUSFOLA
    DATA ADAPTER TYPE = (DISPLAY OR STORAGE), (PAPER TAPE), AND
                        (PAGE PRINTER)
    TERMINAL TO RECEIVE STATISTICS, ROUTING REPORTS AND DADI
    DISPLAYS FROM SITE 01
------------------------------------------------------------
  SITE 01 CS MODE I SUBSCRIBER INFORMATION

    INFORMATION RATE = 2400        PHONE # = 814 7450101
    DTE NUMBER = 1                 DMC = YES
    RI = RUSFOOT                   NO FRAMING
    LMF = 8-LEVEL TTY ONLY         TELETYPE LINE SIZE = 80
    ERROR CONTROL = MULTI-SAMPLING
    ECP AUTHORIZED                 SERVICE MESSAGE RI = RUSFOTA

    DATA ADAPTER TYPE = (DISPLAY OR STORAGE), (PAPER TAPE), AND
    (PAGE PRINTER)
------------------------------------------------------------
  SITE 01 LL30 INFORMATION

    LL30 LTU ____ MD ____ LKG ____   MODE 1
    CONNECTION TYPE = DEDICATED CONVENTIONAL
    LOOP SPEED = 2.4K
    TRANSMISSION MODE = CONTINUOUS
    LMF = 8-LEVEL TTY ONLY JANAP
    SMRI = YERASVA
    Y RELAY ROUTER = CRITIC DETERMINISTIC ROUTER
------------------------------------------------------------
  SITE 02 BASIC INFORMATION

    PHONE # 914 202-9734000            16Kbs AN/TYC-39A
    ALL INTERFACES = UNITED STATES
    ALL BACKLOG CODES = 0
    ALL SECURITY = TS FOR ALL LINES/ROUTERS TO INCLUDE TRAFFIC
                   SERVICE U/R (RUTCCS/UUTCCS)
    ADD ALL SPECAT/SHD AUTHORIZATIONS FOR TRAFFIC SERVICE LINES
------------------------------------------------------------
```

  SITE 02 MS-CS INFORMATION

     NUMBER OF CHANNELS 18   DIPHASE
     NO TED REQUIRED   RED CLOCK
     LL01 IS TRUNK NUMBER 1 LTU ___ LKG ___
     LL02 IS TRUNK NUMBER 2 LTU ___ LKG ___
     LL03 IS TRUNK NUMBER 3 LTU ___ LKG ___
     LL04 IS TRUNK NUMBER 4 LTU ___ LKG ___
     LL05 IS TRUNK NUMBER 5 LTU ___ LKG ___
     ALL DIGITAL TRUNKS. USE LTU 00 THROUGH 04 AND LKG 00
     THROUGH LKG 04 FOR MS/CS TRUNKS

  SITE 02 COLLECTIVE INFORMATION

     ALL = RUTCOLD RUTCAKE RUTCAGE RUTCARP RUTCOKA RUTCOLA

  SITE 02 LL10 INFORMATION

     LL10 LTU ___ MD ___ LKG ___   LOOP SPEED = 9.6K
     DATA MODE CONTROL = YES   SLAVE
     RELAY TYPE = 5   MODE = 6
     FRAMING = NO   ERROR CONTROL =MULTI-SAMPLING
     INFORMATION RATE = 2.4K   FIRST LINK = LL10

  SITE 02 LL11 INFORMATION

     LL11 LTU ___ MD ___ LKG ___   LOOP SPEED = 2.4K
     TRANSMISSION MODE = CONTINUOUS
     FIRST LINK = LOGICAL LINE 10

  SITE 02 LL20 INFORMATION

     LL20 LTU ___ MD ___ LKG ___   LOOP SPEED = 1.2K
     RI = RUTCOLD   LMF = 8-LEVEL TTY ONLY JANAP
     TRANSMISSION MODE = NORMAL   TELETYPE LINE SIZE = 80
     CD = OLD   FULL START OF MESSAGE
     STOP BITS = 2   SERVICE MESSAGE RI = RUTCOLD

  SITE 02 LL21 INFORMATION

     LL21 LTU ___ MD ___ LKG ___   LOOP SPEED = 2.4K
     RI = RUTCAKE   LMF = 8-LEVEL TTY ONLY JANAP
     TRANSMISSION MODE = CONTINUOUS
     TELETYPE LINE SIZE = 80   SMRI = RUTCAKE

SITE 02 LL22 INFORMATION

    LL22 LTU ____ MD ____ LKG ____   LOOP SPEED = 2.4K
    DTE NUMBER = 1   DMC = YES
    MASTER   RI = RUTCAGE
    TELETYPE LINE SIZE = 80   LMF = 8-LEVEL TTY ONLY JANAP
    ERROR CONTROL = MULTI-SAMPLING
    TRANSMISSION MODE = CONTINUOUS
    INFORMATION RATE = 2.4K   ECP AUTHORIZED
    SERVICE MESSAGE RI = RUTCAGE NO FRAMING

SITE 02 LL23 INFORMATION

    LL23 LTU ____ MD ____ LKG ____   LOOP SPEED = 9.6K
    DTE NUMBER = 1   DMC = YES
    MASTER   RI = RUTCARP
    LMF = 8-LEVEL TTY ONLY   TELETYPE LINE SIZE = 80
    ERROR CONTROL = MULTI-SAMPLING
    NO FRAMING   INFORMATION RATE = 9600
    MODE 6 STORAGE = 96   ECP AUTHORIZED
    SERVICE MESSAGE RI = RUTCARP
    DATA ADAPTER TYPE = (DISPLAY OR STORAGE), (PAPER TAPE), AND
                     (PAGE PRINTER)
    TERMINAL TO RECEIVE STATISTICS, ROUTING REPORTS AND DADI
    DISPLAYS FROM SITE 02

SITE 02 CS MODE VI SUBSCRIBER INFORMATION

    INFORMATION RATE = 2400   PHONE # = 815 7450106
    DTE NUMBER = 1   DMC = YES
    RI = RUTCOKE   NO FRAMING
    LMF = 8-LEVEL TTY ONLY   TELETYPE LINE SIZE = 80
    ERROR CONTROL = MULTI-SAMPLING
    MODE 6 STORAGE = 96   ECP AUTHORIZED
    SERVICE MESSAGE RI = RUTCOKA
    DATA ADAPTER TYPE = (DISPLAY OR STORAGE), (PAPER TAPE), AND
                     (PAGE PRINTER)
    TERMINAL TO RECEIVE STATISTICS, ROUTING REPORTS AND DADI
    DISPLAYS FROM SITE 02

```
--------------------------------------------------------------------
  SITE 02 CS MODE I SUBSCRIBER INFORMATION


     INFORMATION RATE = 2400        PHONE # = 815 7450101
     DTE NUMBER = 1                 DMC = YES
     RI = RUTCOOL                   NO FRAMING
     LMF = 8-LEVEL TTY ONLY         TELETYPE LINE SIZE = 80
     ERROR CONTROL = MULTI-SAMPLING
     ECP AUTHORIZED                 SERVICE MESSAGE RI = RUTCOLA
     DATA ADAPTER TYPE = (DISPLAY OR STORAGE), (PAPER TAPE), AND
                        (PAGE PRINTER)
--------------------------------------------------------------------
  SITE 02 LL30 INFORMATION


     LL30 LTU ____ MD ____ LKG ____
     MODE 1
     CONNECTION TYPE = DEDICATED CONVENTIONAL
     LOOP SPEED = 2.4K
     TRANSMISSION MODE = CONTINUOUS
     LMF = 8-LEVEL TTY ONLY JANAP
     SMRI = YERASVA
     Y RELAY ROUTER = CRITIC DETERMINISTIC ROUTER
--------------------------------------------------------------------
```

The following terms with their definitions can assist you in understanding TGEN commands for off-line and on-line procedures.

ASCII - American Standard Code for Information Interchange.

Asynchronous transmission - Often called start-stop transmission, is characterized by the transmission and reception of one character at a time. Each character begins with a "start" bit and ends with a "stop" bit. These bits "frame" the information bits, letting the receiver know where a character begins and ends.

Circuit Switch Equate Line (CSEL) - The scheme used for scheduling messages for a MS/CS trunk group is called the CSEL concept. The first line in a CS trunk group is the CSEL LINE. Messages going out over a CS trunk group are first linked to the CSEL line, then scheduled for whatever line is available with that group. Only the CSEL line requires the following information when being defined: trunk type, backlog group, and last line field. The rest of the lines in the trunkgroup will equate these classmarks from the CSEL.

Collective Routing Indicator (CRI) - A CRI is used to designate a specific delivery list, thus avoiding the listing of each RI separately in the message header. Upon receiving a message addressed to a CRI, the switch replaces the CRI in the header with an RI from the delivery list and delivers the message to each member of the list.

Data mode control (DMC) - DMC allows the MS to automatically establish a subscriber's identity before sending any messages. The DMC feature deals with the security risk of interfacing with circuit switched subscribers. It also provides means for automatic data base coordination.

Data adapter (DA) - DAs may be implemented as stand-alone devices or combined with data terminal equipment (DTE) or other equipment and functions. The MS supports this type terminal through dedicated or switched lines. Interface to the CS requires DA when operating across a digital transmission group (DTG). A AN/UGC-144 is an example of a terminal that can use this type of interface. Provides techniques that allow a message rate that is slower than the loop rate of the transmission hardware. Employees forward error correction which provides a means for the receiver to correct errors that occurred during transmission either by multi-sampling or GOLAY encoding.

Data adapter control block (DACB) - Consists of 37 8-bit characters through which configuration and status information is exchanged between DAs both before and after traffic exchange.

Data adapter control mode (DACM) - The equipment state in which an exchange of data adapter control blocks (DACB) between data adapters (DA) is possible.

Dedicated conventional (DC) - A line and its router that is not switched or data adapter.

Dedicated data adapter (DA/DD) - A line that is digital and non-switched and has the capability of using data adapter protocol. Can interface through TDIM or loop modem.

Dedicated Line - A line which is available for traffic on a full-time basis, is not time-shared with other subscribers, and is not switched via a circuit switched network.

Equate (EQ) - EQ refers to any RI or line that has the same characteristics of another RI or line and that will receive, on a permanent basis, the identical handling of that RI or line. In general, if a terminal or message switch has more than one RI community associated with it (R, U, and Y) you should define the first RI on the SF, LT, RT, or SR and define all other RIs for that terminal/switch as equate (EQ). This equate procedure was designed for use for specific applications in a tactical network. Non-MS relay designators that are remote to the network can be equated to the gateway MS or to the home MS. If a terminal serves non-roving RIs, then you can define the first (or primary) RI for the terminal as a LT or RT. You can then equate the remaining RIs to that same LT or RT. If a roving unit (terminal) serves a set or RIs that are permanently associated with that unit (i.e., that rove with it), then you can define the first RI for the terminal as an LT or RT RI and can equate additional RIs to it. Once an RI/LINE is equated the parameters of the RI/LINE can no longer be individually controlled.

Golay encoding - This method of error correction takes 12 data bits and via a special encoding algorithm, adds 11 protection bits and one parity bit. These protection and parity bits are appended to the data bits before transmission. When the receiver gets this 24-bit codeword, it uses a special decoding algorithm to correct up to 3 bit errors.

Linked lines - Identifies a trunk as a member of a linked line
group. Lines to terminals or switches may be linked to provide
greater throughput during conditions of heavy traffic volume,
backlogs due to line outages, critical traffic, etc. Provides
for two or more connections between the same destination.

Local terminal (LT) - LT RIs contain from four to seven letters.
Local terminals or relays are directly connected to the switch
but are not SF switches. LT equipment includes both
conventional terminals and data adapters.

Multi-sampling - This method of error correction takes each bit
and transmits it many times. The receiver does a majority vote
to determine the correct value.

Parent (PA) - All PA RIs contain four letters. This defines the
relay portion of any RI for which the switch has parent
responsibility (for which it is normally the home site). This
capability serves local terminals but it necessary for proper
routing of individual RIs that rove within the particular
network.

Primary/Connected message switch (SF) SF lines support RIs that
are four-letter relay RIs. SF defines a switch that is directly
connected to the home switch (the switch for which you are
building the data base.) There is no intervening circuit switch
or message switch.

Remote terminal (RT) - RT RIs contain four to seven letters. A
remote terminal is the same as a local terminal, except that it
is connected as a terminal to a primary/connected relay (SF or
SN) rather than to the home switch.

Synchronous transmission - Characterized by the transmission of
a group of characters over a communications link in a continuous
bit stream. Data transfer is controlled by a timing signal
called a clock, initiated at the sending terminal's location.

Secondary/remote message switch (SR) SR lines support RIs that
are four-letter relay RIs. This supports switches that are not
directly connected to the home switch but have the potential of
being directly connected. They are used generally for message
switches separated by circuit switches.

Switched conventional (SC) - A line that supports analog, non-
DA, space division interface with CS; if terminal - ASDI. This
interface is seldom used since the introduction of the AN/UGC-

144 terminal and MSE circuit switch equipment. Will have a
phone number assigned.

Switched data adapter (SD) - Digital, TDIM connection through
CS, will have a phone number assigned.

Trunk - Lines between switches - CS (SC/SD) interface, SF MS
connections, SN MS connections. These trunks may be dedicated
or interswitched. The term "interswitch" is defined as an MS-MS
trunk which traverses two or more circuit switches in tandem.
The term "dedicated" refers to a trunk which is "hardwired",
i.e. configured end-to-end by patching within appropriate
transmission facilities.

User RI (US) - US RIs are from four to seven letters and serve
to identify a subscriber whose service is provided on an
indirect basis via another subscriber terminal. US RIs may
receive service over-the-counter (OTC) or as a subnetwork
subscriber of a manual relay.

SUMMARY:

    You have just demonstrated your ability to construct a
data base and PLDs. This ability will also help you in your
future AN/TYC-39A assignments.

                              END

ON-LINE TABLE GENERATION

INTRODUCTION:

    This practical exercise will provide you with the time to practice performing the on-line table generation in the message switch AN/TYC-39(A). Your learning objective for this lesson is to perform the procedures to use DBD and perform on-line data base commands within a time limit of 45 minutes and to correctly answer 14 of 20 questions within 60 minutes.

ITEMS YOU WILL NEED FOR THIS LESSON:

    a.   Operational AN/TYC-39(A).

    b.   TM 11-5805-790-12 series

    c.   DBD.

THE LESSON STRATEGY:

    This practical exercise directs you in your practice of using DBD and performing on-line data base commands. The primary aids you will use are TM 11-5805-790-12-2, 11-5805-790-12-3 and TM 11-5805-790-12-5.

APPLICATION:

    1.   In Part One, you must be able to perform on-line DBD procedures and enter data base commands into the on-line system within 45 minutes using %M 111-5805-790-12-3 and TM 11-5805-790-12-5.

    2.   Your instructor will initial your PE during your performance.

    3.   In Part Two, answer questions by filling in the blanks or circling the correct answer. When you have completed Part Two, ask your instructor to grade it for you.

    4.   If it is not clear what you are required to do, ask your instructor for clarification.

PART ONE:

Situation instructions: If a password is required, use the master password. Obtain a DBD from your instructor. The following information will be used during your performance exercise. Ask instructor for the router you are to use: ROUTER_____.   LINE 24, MODE II Terminal, LTU 24, MODEM 23, 2400 BAUD, Serves R and U Communities, JANAP 128, LKG 26, Local Terminal, 80 Character Line, US, Continuous Transmission Mode, Backlog 0, 8-level ASCII, 2-Stop Bits, Line and Router classmarked SECRET for R Community.

1. Open an on-line database command input file and read into the system. Hint: FDD must be in proper state before performing either of these commands. Ref TM 11-5805-790-12-3, para 5-26j and 5-28c.

    Command to open file:

    _____

    Command to read file:

    _____

2.   Ensure FDD is at the +C or +D state. Activate the GOST
      function.

      Command _____
              _____

3. Delete line 24.

      Command _____
              _____

4. Delete Router _____

      Command _____
              _____

5. Define a new subscriber line using information in situation instructions. Write out the command below and enter into the on-line AN/TYC-39A processor and onto the DBD.

        Command_____

        _____

        _____

        _____

6. Define a new router FOR the line defined in step 5 using the situation instructions. Write out the command below and enter into the on-line AN/TYC-39A processor and onto the DBD.

        Command_____

        _____

        _____

        _____

7. Modify the line to change from MODEM 23 to MODEM 24.

        Command_____

        _____

        _____

        _____

8. Modify the router to change from secret to confidential.

        Command_____

        _____

        _____

        _____

9. Print a Graphic Display from Supervisor VDT that shows the new line and router.

10. Perform NOST. Bring a FDD to the +C state. Using the off-line VDT and the FDD that is at the +C state, VTOF list contents of the DBD.

Return DBD to instructor. Remove all printouts, turn them into instructor for evaluation.

Instructor's Initials _____

Answer the following questions by circling the correct answer or by filling in the blanks. The main references you will use are TM 11-5805-790-12-2, 12-3, and 12-5.

1.   Which command would be used to obtain an on-line list of passwords?

        a.   PAS.

        b.   PASS.

        c.   STAT PAS.

        d.   STAT PASS.

2.   What user types can obtain an on-line list of passwords?

        a.   ADMIN/SUPV.

        b.   MAINTENANCE.

        c.   SECURITY OFFICER.

        d.   All of the above.

3.   Which command would allow you to add for the first time a data and time change password to the on-line system?

        a.   PASS JULY4$

        b.   RICH V
              PASS MMMMM$ JULY4$

        c.   RICH V MMMMM$
              PASS JULY4$

        d.   Not allowed. Can only be done off-line.

4.   How many TGEN commands must be inputted before the processor will write to the DBD?

        a.   1

        b.   5

        c.   10

        d.   15

5.   While performing on-line TGEN commands, the command error information indicated on your printer three lines of information. What is indicated on line 2?

        a.   *

        b. $

        c.   DBO/DBI ERROR

        d.   Error message with the record number.

6.   What does the NOST command do?

        a.   Terminates write of TGEN commands to DBO.

        b.   Automatically closes DBO floppy disk.

        c.   Activates printing of TGEN commands if no DBO is available.

        d.   All of the above.

7.   TRUE/FALSE. The RICH command must be used if the TGEN command input is the DBD.

8.   What happens when reading a DBD file if an error is detected in the RICH D command or in one of the DBD command records?

Using the following line and router information answer questions 9 through 14:

```
RADD RUTCCAT LT DD L01 D1 LMFAO C80 *
RAD* RUTCCAT M6 EC2 FR=N IR13 DMC=Y DT=STP STR16 SM=RUTCCAT
```

9.   What mode is RUTCCAT?

10.   What code indicates that Golay error control is being employed?

11.   What information rate is being used?

12.   Is data mode control being used?

13.   What data adapter DTE type is RUTCCAT being set up to use?

14.   How many mode VI storage blocks are allocated for RUTCCAT?

Using the following line and router information answer questions 15 through 20:

```
LMOD L26 T28
RADD RUTCDOG LT SD L26 N201 P723777 D1 LMFAO C80 *
RAD* RUTCDOG M1 BS EC0 FR=N IR10 DMC=N DT=STP HRM2000
SM=RUTCDOG
```

15.   What device is being changed with LMOD?

16.   What mode is RUTCDOG?

17.   Is Golay or Multisampling error control being employed?

18.   What information rate is being used?

19.   Is data mode control being employed?

20.   Is anything in the LMOD command being used that would require a RICH command with a password?